

# **2020 DGON Inertial Sensors and Systems (ISS 2020)**

**Braunschweig, Germany  
15 – 16 September 2020**



IEEE Catalog Number: CFP2057W-POD  
ISBN: 978-1-7281-6849-4

**Copyright © 2020 by the Institute of Electrical and Electronics Engineers, Inc.  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP2057W-POD
ISBN (Print-On-Demand):	978-1-7281-6849-4
ISBN (Online):	978-1-7281-6848-7
ISSN:	2377-3464

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

## TABLE OF CONTENTS

	Reference
Editors Preface	iii
Table of Contents	iv
Author's Index	vii
Performance characteristics of a multicore interferometric fiber optic gyroscope using a 7-core fiber.....1	P01
<i>A. Taranta, A. Gillooly, D. Neugroschl, V. I. Kopp, M. Ibsen, C. Emslie, J. Sahu</i>	
Multipoint reset modulation for reduced crosstalk in a miniaturized fiber optic gyroscope.....21	P02
<i>W. Hong, S. Lou, B. Huang, P. Zhang, Y. Ma, Y. Li, W. Wang, M. Wang, C. Ding</i>	
Microoptical gyros based on passive ring cavities.....34	P03
<i>Yu. V. Filatov, E. V. Shalymov, V. Yu. Venediktov,</i>	
A new silicon axisymmetric gyroscope for aerospace applications.....54	P04
<i>N. Vercier, B. Chaumet, B. Leverrier, S. Bouyat</i>	
Evolution and capitalization of a family of MEMS vibrating structure gyros (VSG).....72	P05
<i>A. Kelly, S. Parrish</i>	
Effect of electrostatic nonlinearity on force-to-rebalance mode of operation in CVG.....89	P06
<i>R. Holm, H.R. Petersen, S. Normann, H. Schou, M. Horntvedt, M. Hage, S. Martinsen</i>	
Compact near-navigation-grade IFOG inertial measurement unit IMU400.....108	P07
<i>Yu.N. Korkishko, V.A. Fedorov, S.V. Prilutskiy, D.V. Obuhovich, I.V. Fedorov, V.E. Prilutskiy, V.G. Ponomarev, A.I. Zuev, V.K. Varnakov, I.V. Morev, S.M. Kostritskii</i>	
The influences of cell's temperature characteristic on the performance of nuclear magnetic resonance gyroscope.....125	P08
<i>W. Huang, Y. Liu, Y. He, L. Huo, X. Wang, W. Wang</i>	

Silicon MEMS by Safran - Navigation grade accelerometer ready for mass production.....140	P09
<i>D. Marjoux, Ph Ullah, P-F Moragado-Orsini, M Soursou, Y Lenoir, F. Delhaye</i>	
A miniature quartz vibrating beam accelerometer.....158	P10
<i>T. Yang, G. Yang, W. Lu, J. Wang, D. Han, Y. Yin, J. Xu, T. Ren, F. Zhang, P. Liu, X. Jin, Y. Peng</i>	
A direct approach for high-quality MEMS based IMU/INS production.....171	P11
<i>L. Poletti, D. Sendra Sanchis, R. Siryani</i>	
IMU architecture based on functional redundancy to improve safety features and measurements availability during highly dynamic transients.....190	P12
<i>M. Verola, R. Senatore, E. Quatraro, A. Moretti, A. Pizzarulli, M. Perlmutter</i>	
<i>H design of an EM-ΣΔ for MEMS gyroscopes.....203</i>	P13
<i>F. Saggin, A. Korniienko, G. Papin, G. Scorletti, E. Markiewicz, Y. David</i>	
High-g (20 000g+) testing of an existing tactical grade gyro design.....223	P14
<i>R. Holm, H.R. Petersen, S. Normann, H. Schou, M. Horntvedt, M. Hage, S. Martinsen</i>	
A pedestrian navigation system by low-cost dual footmounted IMUs and inter-foot ranging.....233	P15
<i>M. Zhu, Y. Wu, S. Luo</i>	
Zero velocity detector for foot-mounted inertial navigation system assisted by a dynamic vision sensor.....253	P16
<i>C.-S. Jao, K. Stewart, J. Conradt, E. Neftci, A. M. Shkel</i>	
Advanced receiver autonomous integrity monitoring in tightly integrated GNSS/inertial systems.....271	P17
<i>T. Martin</i>	

**Alternate**

A semi-physical model of Interferometric fiber optic gyroscopes and ways to improve the dynamic performance.....285 PA1

*B. Huang, Y. Li, Z. Pan, S. Lou, G. Wang, W. Hong, Y. Zhao*

GNSS+inertial+odometer navigation system for land vehicles with an extended odometer's model identification.....298 PA2

*N. Vasilyuk, D. Tokarev*